Patent Claims

1. Fibre grating filter optical waveguide device, comprising an optical fibre consisting essentially of silica, whereby said optical fibre has an area with a diffracting grating region, wherein said area with a diffracting grating region is in direct contact with a material having a negative thermal expansion coefficient α satisfying the following equation:

$$\alpha = - (dn_{eff}/dT) / n_{eff}$$

wherein dn_{eff} / dT is the thermo-optic coefficient of the fibre material and n_{eff} is the effective refractive index.

2. Device according to claim 1, wherein the material is a polymeric material.

3. Device according to claim 2, wherein the polymeric material is a crosslinked polymeric material.

4. Device according to claim 2 or 3, wherein the monomeric and/or oligomeric precursor materials of said polymeric material display an anisotropic behaviour.

5. Device according to claim 4, wherein the monomeric and/or oligomeric precursor materials of said polymeric material display liquid crystalline behaviour in the molten state.

6. Device according to claim 5, wherein the polymeric material displays anisotropic characteristics.

7. Device according to claim 6, wherein the polymeric material exhibits a negative linear thermo electrical coefficient along the fibre axis.

8. Method for manufacturing a device according to one of the preceding claims, comprising the following steps:

- forming a diffraction grating area along an optical axis of an optical fibre
- bringing in contact of at least said area of the optical fibre with monomeric and/or oligomeric precursor materials give a layer or a coating of said monomeric and/or oligomeric precursor materials on at least said area
- curing the layer of the monomeric and/or oligomeric precursor materials

9. Method according to claim 8, wherein the curing is carried out by temperature, UV, electron beam or gamma irradiation.

10. Method according to claim 8 or 9, wherein the monomeric and/or oligomeric prrcursor materials are aligned by a magnetic field in the fibre axis direction before or during curing.

11. Device obtainable by a process according to one of the preceding claims 8 to 10.